

## PATENT COOPERATION TREATY

PCT

## NOTIFICATION OF ELECTION

(PCT Rule 61.2)

From the INTERNATIONAL BUREAU

To:

Assistant Commissioner for Patents  
 United States Patent and Trademark  
 Office  
 Box PCT  
 Washington, D.C.20231  
 ETATS-UNIS D'AMERIQUE

in its capacity as elected Office

<b>Date of mailing (day/month/year)</b> 02 August 2000 (02.08.00)	
<b>International application No.</b> PCT/NO99/00356	<b>Applicant's or agent's file reference</b> 136312/ØS/BF
<b>International filing date (day/month/year)</b> 29 November 1999 (29.11.99)	<b>Priority date (day/month/year)</b> 01 December 1998 (01.12.98)
<b>Applicant</b> DYBEDOKKEN, Bjørn, Magne et al	

1. The designated Office is hereby notified of its election made:

☒ in the demand filed with the International Preliminary Examining Authority on:  
 29 June 2000 (29.06.00)

☐ in a notice effecting later election filed with the International Bureau on:  
 \_\_\_\_\_

2. The election ☒ was  
☐ was not

made before the expiration of 19 months from the priority date or, where Rule 32 applies, within the time limit under Rule 32.2(b).

<b>The International Bureau of WIPO</b> 34, chemin des Colombettes 1211 Geneva 20, Switzerland  Facsimile No.: (41-22) 740.14.35	<b>Authorized officer</b>  Claudio Borton  Telephone No.: (41-22) 338.83.38
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# PATENT COOPERATION TREATY

From the  
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

## PCT

To:  OSLO PATENTKONTOR AS P.O. Box 7007 M N-0306 OSLO NORVEGE	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 50%;">Nr. <b>75</b></td> <td style="width: 50%;">O.Nr.</td> </tr> <tr> <td colspan="2" style="text-align: center;">Mottatt <b>09 OKT. 2000</b></td> </tr> <tr> <td colspan="2">Går til: <b>S</b></td> </tr> </table>	Nr. <b>75</b>	O.Nr.	Mottatt <b>09 OKT. 2000</b>		Går til: <b>S</b>	
Nr. <b>75</b>	O.Nr.						
Mottatt <b>09 OKT. 2000</b>							
Går til: <b>S</b>							

NOTIFICATION OF TRANSMITTAL OF  
THE INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT  
(PCT Rule 71.1)

Applicant's or agent's file reference <b>136312/OS/BF</b>		<b>IMPORTANT NOTIFICATION</b>	
International application No. <b>PCT/NO99/00356</b>	International filing date (day/month/year) <b>29/11/1999</b>	Priority date (day/month/year) <b>01/12/1998</b>	
Applicant <b>TELEFONAKTIEBOLAGET LM ERICSSON et al.</b>			

1. The applicant is hereby notified that this International Preliminary Examining Authority transmits herewith the international preliminary examination report and its annexes, if any, established on the international application.
2. A copy of the report and its annexes, if any, is being transmitted to the International Bureau for communication to all the elected Offices.
3. Where required by any of the elected Offices, the International Bureau will prepare an English translation of the report (but not of any annexes) and will transmit such translation to those Offices.

#### 4. REMINDER

The applicant must enter the national phase before each elected Office by performing certain acts (filing translations and paying national fees) within 30 months from the priority date (or later in some Offices) (Article 39(1)) (see also the reminder sent by the International Bureau with Form PCT/IB/301).

Where a translation of the international application must be furnished to an elected Office, that translation must contain a translation of any annexes to the international preliminary examination report. It is the applicant's responsibility to prepare and furnish such translation directly to each elected Office concerned.

For further details on the applicable time limits and requirements of the elected Offices, see Volume II of the PCT Applicant's Guide.

Name and mailing address of the IPEA/  <div style="display: flex; align-items: center;"> <div>             European Patent Office              D-80298 Munich              Tel. +49 89 2399 - 0 Tx: 523656 epmu d              Fax: +49 89 2399 - 4465           </div> </div>	Authorized officer  <b>Scaglia, F</b>  Tel. +49 89 2399-2836
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## INTERNATIONAL PRELIMINARY EXAMINATION REPORT

(PCT Article 36 and Rule 70)

Applicant's or agent's file reference 136312/OS/BF	<b>FOR FURTHER ACTION</b>	See Notification of Transmittal of International Preliminary Examination Report (Form PCT/IPEA/416)
International application No. PCT/NO99/00356	International filing date (day/month/year) 29/11/1999	Priority date (day/month/year) 01/12/1998
International Patent Classification (IPC) or national classification and IPC H04L12/00		
Applicant TELEFONAKTIEBOLAGET LM ERICSSON et al.		

1. This international preliminary examination report has been prepared by this International Preliminary Examining Authority and is transmitted to the applicant according to Article 36.



2. This REPORT consists of a total of 5 sheets, including this cover sheet.

- ☒ This report is also accompanied by ANNEXES, i.e. sheets of the description, claims and/or drawings which have been amended and are the basis for this report and/or sheets containing rectifications made before this Authority (see Rule 70.16 and Section 607 of the Administrative Instructions under the PCT).

These annexes consist of a total of 12 sheets.

3. This report contains indications relating to the following items:

- I ☒ Basis of the report
- II ☐ Priority
- III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
- IV ☐ Lack of unity of invention
- V ☒ Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
- VI ☐ Certain documents cited
- VII ☐ Certain defects in the international application
- VIII ☐ Certain observations on the international application

Date of submission of the demand  29/06/2000	Date of completion of this report  05.10.2000
Name and mailing address of the international preliminary examining authority:   European Patent Office D-80298 Munich Tel. +49 89 2399 - 0 Tx: 523656 epmu d Fax: +49 89 2399 - 4465	Authorized officer  Hodgins, W  Telephone No. +49 89 2399 8987  

# INTERNATIONAL PRELIMINARY EXAMINATION REPORT

International application No. PCT/NO99/00356

## I. Basis of the report

1. This report has been drawn on the basis of (*substitute sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this report as "originally filed" and are not annexed to the report since they do not contain amendments.*):

### Description, pages:

1-10                      with telefax of                      19/09/2000

### Claims, No.:

1-8                      with telefax of                      19/09/2000

### Drawings, sheets:

1/1                      as originally filed

2. The amendments have resulted in the cancellation of:

- ☐ the description,              pages:
- ☐ the claims,                  Nos.:
- ☐ the drawings,                sheets:

3. ☐ This report has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)):

4. Additional observations, if necessary:

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT**

International application No. PCT/NO99/00356

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**V. Reasoned statement under Article 35(2) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**

**1. Statement**

Novelty (N)	Yes:	Claims	1-8
	No:	Claims	
Inventive step (IS)	Yes:	Claims	1-8
	No:	Claims	
Industrial applicability (IA)	Yes:	Claims	1-8
	No:	Claims	

**2. Citations and explanations**

**see separate sheet**

Concerning Point V

- 1) D1: WO 98 28937 A1 (TELEFONAKTIEBOLAGET LM ERICSSON) 2 July 1998  
D2: US 5 077 790 A (D'AMICO ET AL) 31 December 1991  
D3: US 5 572 574 A (BARNES ET AL) 5 November 1996
- 2) Claim 1 relates to an arrangement in large DECT systems (or similar), including several Fixed Parts (FP) connected to the same Local Network (LNW), each of said FP associated with one or more Radio Fixed Parts (RFP). Such systems are or course generally known in the art, for example from D1, the closest prior art which is now cited in the description.

A list of acronyms common in the field of DECT is found on page 9 of the description.

A problem in such systems is that the handling of parameters such as PARI, RPN etc in a network with many FPs is complex and time consuming, especially when adding or removing FPs to the LNW. The current application aims to simplify this.

This is overcome in the current application (cf characterizing part of claim 1) by assigning a unique SARI to the first FP connected to the LNW. Means in the LNW then derives the PARIs of each FP from said SARI. Moreover, means are provided within each FP to manage the ids of associated RFPs so that each RFP has an RPN unique to its associated FP.

Although in D1, the allocation of the PARIs is (like in the current application) managed centrally in the LNW, deriving them from an initially allocated SARI is neither known nor derivable from the prior art. Moreover, in D1 the RPNs are also administrated centrally in the LNW, rather than in the associated FP.

Accordingly, since the claimed subject matter is neither known nor derivable from the prior art claim 1 meets the requirements of Articles 33(1) - (4) PCT with regard to novelty, inventive step and industrial applicability.

**INTERNATIONAL PRELIMINARY  
EXAMINATION REPORT - SEPARATE SHEET**

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- 3) Owing to their dependence on claim 1, claims 2 - 8 also meet the requirements of Articles 33(1) - (4) PCT with regard to novelty, inventive step and industrial applicability.

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ARRANGEMENT IN A NETWORK, ESPECIALLY FOR LARGE DIGITAL  
ENHANCED CORDLESS TELECOMMUNICATIONS (DECT) SYSTEMS

Field of the invention

The present invention relates to an arrangement in a  
5 network, especially for large Digital Enhanced Cordless  
Telecommunications (DECT) Systems, i.e. systems with  
several fixed parts connected to the same local network.

Technical background

The problem area

10 In Figure 1 there is illustrated a DECT system with several  
Fixed Parts (FP) connected to the same local network (LNW).  
An FP contains all the elements in a DECT network between  
the local network (LNW) and the DECT air interface.

Each FP has an ID that is unique within the network, the  
15 Primary Access Rights Identity, PARI.

Each Radio Fixed Part (RFP, base station) has a Radio Fixed  
Part Number, RPN that is unique within the fixed part that  
it is connected to. The base stations transmit a Radio  
Fixed Part Identity, RFPI, on the air interface. The RFPI  
20 is a combination of the PARI, the RPN and an extension bit  
E, and identifies the RFP and the FP that the RFP is  
connected to. The RFPI is used by the *Portable Parts*, PPs  
(handsets), to determine if they have access to the  
network.

25 In addition to the RFPI, the RFP may transmit a *Secondary  
Access Rights Identity*, SARI, which may also be used to  
give the PPs access to the network.



The layout and rules for use of ARIs and RFPI is defined in (1).

The structure of ARI and RFPI for private networks, class B, is shown in Figure 2. The elements are defined as follows:

**E**      **Extension bit.** Indicates if an SARI is available or not. Not relevant for this document.

**ARC**   **Access Rights Class**  
Shows the type of access to a DECT network, such as residential, private or public.

**EIC**   **Equipment Installer's code**  
This a code that is supplied by ETSI identifies the installer of the DECT system, e.g. Ericsson.

**FPN**   **Fixed Part Number**  
A 12-bit number that identifies the fixed part. The number is unique to each FP within a network.

**RPN**   **Radio Fixed Part Number**  
An 8-bit number that identifies the radio fixed part. The number is unique to each RFP within an FP.

20    The problem that this Invention Disclosure discusses is that of handling the different parameters such as PARI, RPN and FLI, in a network with many FP's. This applies both to the network owner, who must keep track of a number of parameters in his own network, and to the Equipment  
25    Installer (e.g. Ericsson) who must keep a data base of parameters for all the fixed parts sold.

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- If an FP or an RFP is to be removed, or if an FP or an RFP is added to the network, the FP or RFP must be assigned a FARI or an RPN. There are also other parameters that must be adapted to handle the new or removed FP or RFP, such as
- 5 HLI. The Equipment Installer must find a free identity (ARI) for the customer (network owner), and the customer must then assign the value to the network.

This manual administration of parameters requires extensive bookkeeping and is therefore time consuming and costly.

10 Known solution

The use of DECT identities is described in detail in ETSI standards (1). ETSI does not, however, say anything about how the dealer of the system shall select and maintain the parameters.

15 Problems with known solutions

Administration of identities for DECT systems is time consuming and costly both for the manufacturer and the operator of the equipment. Anything that can reduce the complexity of operation is therefore desirable.

- 20 The problems with handling DECT identities can be separated in three areas:

- 1 Manufacturer: Assigning ARI values of the DECT equipment that is sold, and maintaining a database of these with reference to whom the equipment is sold.
- 25 This is especially complex if the equipment is sold via retailers.

2     Network owner: More work to install new fixed parts,  
because the PARIs must be known and entered into the  
system manually. One cannot simply connect the  
hardware and start using it.

5     3     Security (Network owner): It is desirable to have as  
many of the (most significant) bits in the ARI for the  
different FPs in a network equal, to reduce the risk  
of illegal access. This decides the length of the HLI,  
and to maintain as high a security level as possible,  
10     the value of the HLI should be small. If FPs, with a  
different EIC than the existing FPs in the network,  
are added, the HLI will be large, and illegal access  
to the system will be easier.

Further prior art

15     From US 5,077,790 (D'Amico et al.) there is known a method  
for registration of a portable unit, that may be used in a  
communication system, comprising a network controller  
having a database for storing portable identification  
numbers. However, this prior art is silent about how to  
20     extend a telecommunication system having several fixed  
parts, in a safe and expedient manner.

US 5,572,574 relates to a method of on-air registration of  
a cordless telephone handset with a base station.  
Consequently, also this publication is silent about how to  
25     install new fixed parts in a network.

WO 98/28937 relates to an arrangement for location area  
management in a DECT system, in which a central unity  
connected to the fixed parts of a local area (LA) manages  
the identities within the LA. However, this solution may  
30     require manual entry of data identities for several times

after initialisation, e.g. when the handsets are to roam between systems.

#### Objects of the invention

5 An object of the present invention is to provide an arrangement whereby the problems related to known solutions are eliminated.

10 Another object of the present invention is to provide an arrangement whereby the dealer of the system can select and maintain the related parameters in a far more expedient manner.

Still another object of the present invention is to provide an arrangement whereby a network owner can install new fixed parts in a more time-saving and appropriate manner.

15 Yet another object of the present invention is to provide an arrangement whereby the network owner can maintain a high and secure level in order to reduce the risk of illegal access.

#### Summary of the invention

20 These objects are achieved in an arrangement as stated in the preamble, which according to the present invention is characterised by the features as stated in the characterising clause of the enclosed patent claim 1.

25 In other words, according to the present invention there is given a solution of automatically generating the needed identities.

Further features and advantages of the present invention will appear from the following description taken in conjunction with the enclosed drawings, as well as from the further enclosed patent claims.

5 Brief disclosure of the drawings

Figure 1 is a schematical diagram illustrating a DECT system with several fixed parts, in which system the present invention can find its application.

10 Figure 2 is a schematical diagram illustrating the layout of ARI and RFPI class B, private access.

Detailed description of embodiments

Reference is made to Figure 1, wherein is illustrated a Digital Enhanced Cordless Telecommunications System, DECT. This system comprises several fixed parts FP connected to  
15 the same local network LNW. An FP contains all the elements in a DECT network between the local network LNW and the DECT air interface.

Each FP has an ID that is unique within the network, the Primary Access Rights Identity, PARI.

20 Consequently, each FP connected to a LNW must have its own, unique PARI within the network.

The local network will manage the PARI identities such that each FP has its own unique PARI. The FP will manage the identities of the base stations, such that each base  
25 station has an RPN that is unique within the fixed part. The local network will automatically select a new ARI when

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a new FP is connected. The FP will select a new base station identity when a new base station is connected.

When the first FP is connected to the network, the network must be given an SARI. The value of the SARI is given to  
5 the network operator by an Equipment installer (ref. EIC), and is entered into the network manually. The value of the SARI is unique to the network, and is distributed to all the FPs in the network, and is transmitted on all RFPs.

10 The PARI for each FP is calculated using the EIC-part of the SARI, see Figure 2. The HLI, which is common to the LNW, is recalculated and distributed to all FPs in the LNW when a new FP is added or removed.

The RPN for each RFP is handled by the individual FPs, and is automatically given to the RFPs when they are connected.

15 Advantages

The automatic generation of parameters will reduce service and maintenance cost both for the manufacturer/distributor and the operator of cordless telecommunication systems. This creates a concept of "plug-and-play".

20 Assigning similar PARI values to all FPs in a system ensures that the value of the HLI will be small. This reduces the risk that other users will attempt (illegal) access to the network.

Broadening

25 May be applicable to other cordless and cellular systems.

**GLOSSARY AND ACRONYMS****Glossary****Fixed Part**

5

A physical grouping that contains all the elements in the DECT network between the local network and the DECT air interface.

**Equipment Installer**

10

The organisation that is responsible for installing the DECT equipment, usually the same as the manufacturer, e.g. Ericsson.

**Local Network**

15

A telecommunication network capable of offering local telecommunication services. In this document, the term "network" is used in the same meaning as "Local Network".

**Portable Part**

20

A physical grouping that contains all the elements between the user and the DECT air interface. Usually the cordless telephone handset.

**Radio fixed part**

25

A physical sub-group of an FP that contains all the radio endpoints that are connected to a single system of antennas (=radio base station)

**Acronyms**

	<b>ARI</b>	Access Rights Identity
	<b>DECT</b>	Digital Enhanced Cordless Telecommunications
	<b>EIC</b>	Equipment Installer's Code
5	<b>FP</b>	Fixed Part
	<b>HLI</b>	Handover Length Indicator
	<b>LNW</b>	Local Network
	<b>PARI</b>	Primary Access Rights Identity
	<b>PARK</b>	Portable Access Rights Key
10	<b>PP</b>	Portable Part
	<b>RFP</b>	Radio Fixed Part
	<b>RPN</b>	Radio fixed Part Number
	<b>SARI</b>	Secondary Access Rights Identity



Reference documents

1. ETS300175-6 Second Edition

Radio Equipment and systems (RES);

Digital Enhanced Cordless Telecommunications (DECT);

5 Common Interface (CI);

Part 6: Identities and addressing

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## P a t e n t   c l a i m s

1. Arrangement in large Digital Enhanced Cordless Telecommunication (DECT) systems or similar systems, including several Fixed Parts (FP) connected to the same  
5 Local Network (LNW), each of said FP associated with one or more Radio Fixed Parts (RFP),  
c h a r a c t e r i z e d   i n   means for assigning a unique Secondary Access Rights Identity (SARI) to the LNW when the first FP is connected, means within the LNW for  
10 automatically assigning a unique Primary Access Rights Identity (PARI) to each Fixed Part (FP) by deriving said PARI from a combination of an Equipment Installer's Code (EIC) included in said SARI and one or more generated bits, means within each Fixed Part (FP) for managing the  
15 identities of associated Radio Fixed Parts/base stations (RFP) each to have a Radio Fixed Part Number (RPN) that is unique with the Fixed Part (FP).
2. Arrangement as claimed in claim 1,  
20 c h a r a c t e r i z e d   i n   means within said LNW for selecting new Access Rights Identity (ARI) when a new fixed part (FP) is connected.
3. Arrangement as claimed in claim 1 or 2,  
25 c h a r a c t e r i z e d   i n   means within the FP for selecting a new base station/Radio Fixed Part Identity when a new base station/Radio Fixed Part is connected.
4. Arrangement as claimed in any of the preceding claims,  
30 c h a r a c t e r i z e d   i n   that said SARI is provided to the network operator by an Equipment Installer, and that said Equipment Installer or network operator manually enters said SARI into the network.

5. Arrangement as claimed in any of the preceding claims, characterized in means for distributing said SARI to all the FPs in the network and for transmitting to all RFPs.

5

6. Arrangement as claimed in any of the preceding claims, characterized in means for recalculating and distributing the Handover Length Indicator (HLI) to all FPs in the LNW when a new FP is added or removed.

10

7. Arrangement as claimed in any of the preceding claims, characterized in that the RPN for each RFP is handled by the individual FPs, and is automatically given to the RFPs when they are connected.

15

8. Arrangement as claimed in any of the preceding claims, characterized in that the arrangement is implemented as a "plug-and-play" concept.

ARRANGEMENT IN A NETWORK, ESPECIALLY FOR LARGE DIGITAL  
ENHANCED CORDLESS TELECOMMUNICATIONS (DECT) SYSTEMS.

Field of the invention

5

The present invention relates to an arrangement in a network, especially for large Digital Enhanced Cordless Telecommunications (DECT) Systems, i.e. systems with several fixed parts connected to the same local network.

10

Technical background

The problem area

In fig. 1 there is illustrated a DECT system with several  
15 Fixed Parts (FP) connected to the same local network (LNW). An FP contains all the elements in a DECT network between the local network (LNW) and the DECT air interface.

20 Each FP has an ID that is unique within the network, the Primary Access Rights Identity, PARI.

Each Radio Fixed Part (RFP, base station) has a Radio Fixed Part Number, RPN that is unique within the fixed  
25 part that it is connected to. The base stations transmit a Radio Fixed Part Identity, RFPI, on the air interface. The RFPI is a combination of the PARI, the RPN and an extension bit E, and identifies the RFP and the FP that the RFP is connected to. The RFPI is used by the Portable  
30 Parts, PPs (handsets), to determine if they have access to the network.

In addition to the RFPI, the RFP may transmit a *Secondary Access Rights Identity*, SARI, which may also be used to give the PPs access to the network.

5 The layout and rules for use of ARIs and RFPI is defined in (1).

The structure of ARI and RFPI for private networks, class B, is shown in Figure 2. The elements are defined as follows:

10

E     **Extension bit.** Indicates if an SARI is available or not. Not relevant for this document.

ARC   **Access Rights Class**

15       Shows the type of access to a DECT network, such as residential, private or public.

EIC   **Equipment Installer's code**

      This a code that is supplied by ETSI identifies the installer of the DECT system, e.g. Ericsson.

FPN   **Fixed Part Number**

20       A 12-bit number that identifies the fixed part. The number is unique to each FP within a network.

RPN   **Radio Fixed Part Number**

      An 8-bit number that identifies the radio fixed part. The number is unique to each RFP within an FP.

25

      The problem that this Invention Disclosure discusses is that of handling the different parameters such as PARI, RPN and HLI, in a network with many FPs. This applies both to the network owner, who must keep track of a  
30 number of parameters in his own network, and to the Equipment Installer (e.g. Ericsson) who must keep a data base of parameters for all the fixed parts sold.

If an FP or RFP is to be removed, or if an FP or RFP is added to the network, the FP or RFP must be assigned a PARI or an RPN. There are also other parameters that must be adapted to handle the new or removed FP or RFP, such as HLI. The Equipment Installer must find a free identity (ARI) for the customer (network owner), and the customer must then assign the value to the network.

This manual administration of parameters requires extensive bookkeeping and is therefore time consuming and costly.

#### Known solution

The use of DECT identities is described in detail in ETSI standards (1). ETSI does not, however, say anything about how the dealer of the system shall select and maintain the parameters.

#### Problems with known solutions

Administration of identities for DECT systems is time consuming and costly both for the manufacturer and the operator of the equipment. Anything that can reduce the complexity of operation is therefore desirable.

The problems with handling DECT identities can be separated in three areas:

- 1 Manufacturer: Assigning ARI values of the DECT equipment that is sold, and maintaining a database of these with reference to whom the equipment is sold. This is especially complex if the equipment is sold via retailers.

2     **Network owner:** More work to install new fixed parts,  
because the PARIs must be known and entered into the  
system manually. One cannot simply connect the  
5     hardware and start using it.

3     **Security (Network owner):** It is desirable to have as  
many of the (most significant) bits in the ARI for  
the different FPs in a network equal, to reduce the  
10    risk of illegal access. This decides the length of  
the HLI, and to maintain as high a security level as  
possible, the value of the HLI should be small. If  
FPs, with a different EIC than the existing FPs in  
the network, are added, the HLI will be large, and  
15    illegal access to the system will be easier.

Further prior art

From US 5,077,790 (D'Amico et al.) there is known a  
20    method for registration of a portable unit, that may be  
used in a communication system, comprising a network  
controller having a database for storing portable  
identification numbers. However, this prior art is silent  
about how to extend a telecommunication system having  
25    several fixed parts, in a safe and expedient manner.

US 5,572,574 relates to a method of on-air registration  
of a cordless telephone handset with a base station.  
Consequently, also this publication is silent about how  
30    to install new fixed parts in a network.

Objects of the invention

5 An object of the present invention is to provide an arrangement whereby the problems related to known solutions are eliminated.

10 Another object of the present invention is to provide an arrangement whereby the dealer of the system can select and maintain the related parameters in a far more expedient manner.

15 Still another object of the present invention is to provide an arrangement whereby a network owner can install new fixed parts in a more time-saving and appropriate manner.

20 Yet another object of the present invention is to provide an arrangement whereby the network owner can maintain a high and secure level in order to reduce the risk of illegal access.

Summary of the invention

25 These objects are achieved in an arrangement as stated in the preamble, which according to the present invention is characterised by the features as stated in the characterising clause of the enclosed patent claim 1.

30 In other words, according to the present invention there is given a solution of automatically generating the needed identities.



Further features and advantages of the present invention will appear from the following description taken in conjunction with the enclosed drawings, as well as from the further enclosed patent claims.

5

Brief disclosure of the drawings

Fig. 1 is a schematical diagram illustrating a DECT system with several fixed parts, in which system the  
10 present invention can find its application.

Fig. 2 is a schematical diagram illustrating the layout of ARI and RFPI class B, private access.

15 Detailed description of embodiments

Reference is made to Fig. 1, wherein is illustrated a Digital Enhanced Cordless Telecommunications System, DECT. This system comprises several fixed parts FP  
20 connected to the same local network LNW. An FP contains all the elements in a DECT network between the local network LNW and the DECT air interface.

Each FP has an ID that is unique within the network, the  
25 Primary Access Rights Identity, PARI.

Consequently, each FP connected to a LNW must have its own, unique PARI within the network.

30 The local network will manage the PARI identities such that each FP has its own unique PARI. The FP will manage the identities of the base stations, such that each base station has an RPN that is unique within the fixed part.

The local network will automatically select a new ARI when a new FP is connected. The FP will select a new base station identity when a new base station is connected.

- 5 When the first FP is connected to the network, the network must be given an SARI. The value of the SARI is given to the network operator by an Equipment installer (ref. EIC), and is entered into the network manually. The value of the SARI is unique to the network, and is
- 10 distributed to all the FPs in the network. and is transmitted on all RFPs.

The PARI for each FP is calculated using the EIC-part of the SARI, see Figure 2. The HLI, which is common to the

15 LNW, is recalculated and distributed to all FPs in the LNW when a new FP is added or removed.

The RPN for each RFP is handled by the individual FPs, and is automatically given to the RFPs when they are

20 connected.

#### Advantages

The automatic generation of parameters will reduce

25 service and maintenance cost both for the manufacturer/distributor and the operator of cordless telecommunication systems. This creates a concept of "plug-and-play".

- 30 Assigning similar PARI values to all FPs in a system ensures that the value of the HLI will be small. This reduces the risk that other users will attempt (illegal) access to the network:

Broadening

May be applicable to other cordless and cellular systems.

5

Glossary and AcronymsGlossary**Fixed Part**

10

A physical grouping that contains all the elements in the DECT network between the local network and the DECT air interface.

15 **Equipment Installer**

The organisation that is responsible for installing the DECT equipment, usually the same as the manufacturer, e.g. Ericsson.

20 **Local Network**

A telecommunication network capable of offering local telecommunication services. In this document, the term "network" is used in the same meaning as "Local Network".

25

**Portable Part**

A physical grouping that contains all the elements between the user and the DECT air interface. Usually the cordless telephone handset.

30

**Radio fixed part**

A physical sub-group of an FP that contains all the radio endpoints that are connected to

a single system of antennas  
(=radio base station)

#### Acronyms

	ARI	Access Rights Identity
5	DECT	Digital Enhanced Cordless Telecommunications
	EIC	Equipment Installer's Code
	FP	Fixed Part
	HLI	Handover Length Indicator
	LNW	Local Network
10	PARI	Primary Access Rights Identity
	PARK	Portable Access Rights Key
	PP	Portable Part
	RFP	Radio Fixed Part
	RPN	Radio fixed Part Number
15	SARI	Secondary Access Rights Identity

#### Reference documents

- (1) ETS300175-6 Second Edition
- 20 Radio Equipment and systems (RES);  
Digital Enhanced Cordless Telecommunications (DECT);  
Common Interface (CI);  
Part 6: Identities and addressing

## C l a i m s

1. Arrangement in a network, especially for large Digital Enhanced Cordless Telecommunications (DECT) systems, i.e. systems with several fixed parts (FP) connected to the same local network (LNW),  
c a r a c h e r i s e d i n that each fixed part (FP) is given its own unique Primary Access Rights Identity (PARI), said PARI identities being managed by the local network LNW, and that each fixed part (FP) will manage the identities of associated Radio Fixed Parts/base stations (RFP) such that each base station will be given a Radio Fixed Part Number (RPN) that is unique with the Fixed Part (FP).
2. Arrangement as claimed in claim 1,  
c a r a c h e r i s e d i n that said local network (LNW) is further provided with means for selecting new Access Rights Identity (ARI) when a new fixed part (FP) is connected.
3. Arrangement as claimed in claim 1 or 2,  
c a r a c h e r i s e d i n that said fixed part (FP) comprises means for selecting a new base station/Radio Fixed Part Identity when a new base station/Radio Fixed Part is connected.
4. Arrangement as claimed in any of the preceding claims,  
c a r a c h e r i s e d i n that said network is given a Secondary Access Rights Identity (SARI), especially when a first fixed part (FP) is connected to the network.

5. Arrangement as claimed in claim 4, characterised in that said SARI is given to the network operator by an Equipment installer and is entered into the network manually.

5

6. Method as claimed in claim 4 or 5, characterised in that said SARI, being unique to the network, is distributed to all the FPs in the network and is transmitted to all RFPs.

10

7. Arrangement as claimed in any of the preceding claims, characterised in that said PARI of each FP is calculated by using the EIC-part of the SARI.

15

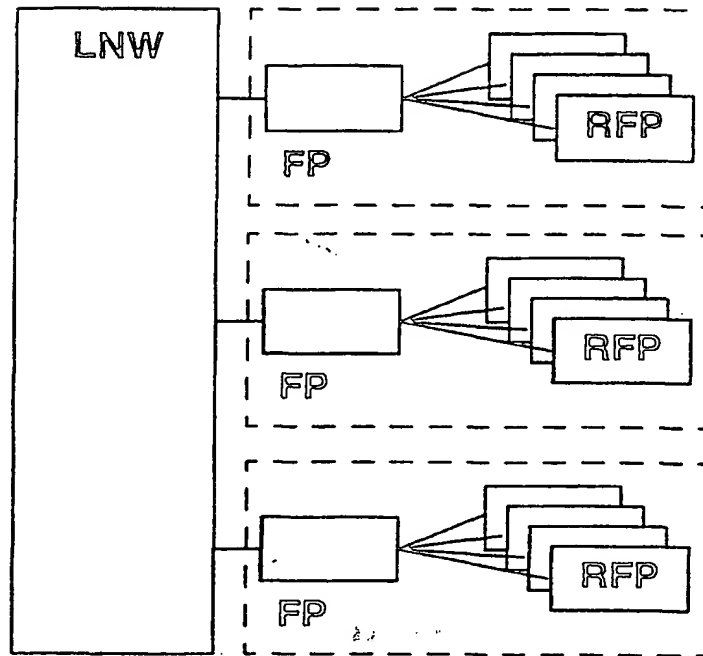
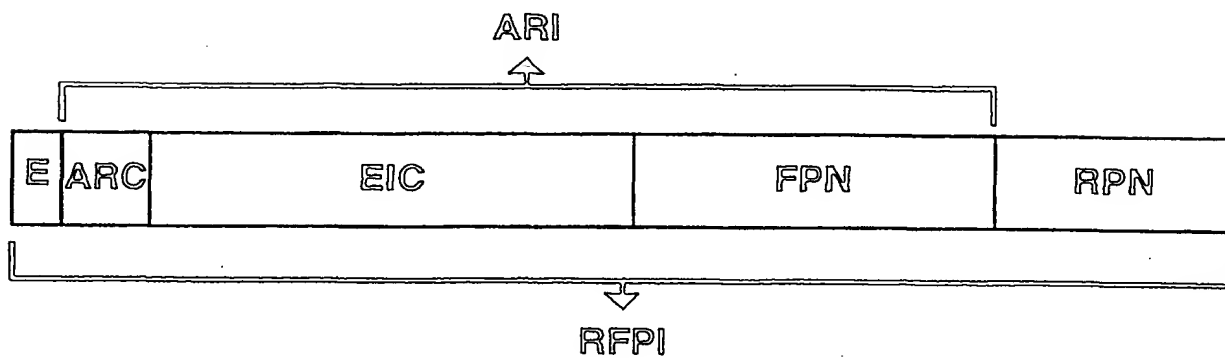
8. Arrangement as claimed in any of the preceding claims, characterised in that the Handover Length Indicator (HLI), which is common to the LNW, is recalculated and distributed to all FPs in the LNW when a new FP is added or removed.

20

9. Arrangement as claimed in any of the preceding claims, characterised in that the RPN for each RFP is handled by the individual FPs, and is automatically given to RFPs when they are connected.

25

10. Arrangement as claimed in any of the preceding claims, characterised in that the arrangement is implemented as a "plug-and-play" concept.

Figure 1Figure 2

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## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>7</sup> :</b> <b>H04L 12/00</b>	<b>A2</b>	<b>(11) International Publication Number:</b> <b>WO 00/33507</b> <b>(43) International Publication Date:</b> <b>8 June 2000 (08.06.00)</b>
<b>(21) International Application Number:</b> PCT/NO99/00356 <b>(22) International Filing Date:</b> 29 November 1999 (29.11.99) <b>(30) Priority Data:</b> 19985608 1 December 1998 (01.12.98) NO <b>(71) Applicant (for all designated States except US):</b> TELEFONAKTIEBOLAGET LM ERICSSON [SE/SE]; S-126 25 Stockholm (SE). <b>(72) Inventors; and</b> <b>(75) Inventors/Applicants (for US only):</b> DYBEDOKKEN, Bjørn, Magne [NO/NO]; Nedre Toppenhaug 86, N-1353 Bærums Verk (NO). TØNNESLAND, Sverre [NO/NO]; Etterstad-sletta 76, N-0659 Oslo (NO). <b>(74) Agent:</b> OSLO PATENTKONTOR AS; Postboks 7007 M, N-0306 Oslo (NO).		<b>(81) Designated States:</b> AE, AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), DM, EE, EE (Utility model), ES, FI, FI (Utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KR (Utility model), KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>Without international search report and to be republished upon receipt of that report.</i>
<b>(54) Title:</b> ARRANGEMENT IN A NETWORK, ESPECIALLY FOR LARGE DIGITAL ENHANCED CORDLESS TELECOMMUNICATIONS (DECT) SYSTEMS  <b>(57) Abstract</b>  The present invention relates to an arrangement in a network, especially for large Digital Enhanced Cordless Telecommunications (DECT) Systems, i.e. systems with several fixed parts (FP) connected to the same local network (LNW), and for the purpose of providing a system that can select and maintain the parameters of such a system in a more efficient and expedient manner, it is according to the invention suggested that each fixed part (FP) is given its own unique Primary Access Rights Identity (PARI), said PARI identities being managed by the local network LNW, and that each fixed part (FP) will manage the identities of associated Radio Fixed Parts/base stations (RFP) such that each base station will be given a Radio Fixed Part Number (RPN) that is unique with the Fixed Part (FP).		



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ARRANGEMENT IN A NETWORK, ESPECIALLY FOR LARGE DIGITAL  
ENHANCED CORDLESS TELECOMMUNICATIONS (DECT) SYSTEMS.

Field of the invention

5

The present invention relates to an arrangement in a network, especially for large Digital Enhanced Cordless Telecommunications (DECT) Systems, i.e. systems with several fixed parts connected to the same local network.

10

Technical background

**The problem area**

15 In fig. 1 there is illustrated a DECT system with several Fixed Parts (FP) connected to the same local network (LNW). An FP contains all the elements in a DECT network between the local network (LNW) and the DECT air interface.

20 Each FP has an ID that is unique within the network, the Primary Access Rights Identity, PARI.

Each Radio Fixed Part (RFP, base station) has a Radio Fixed Part Number, RPN that is unique within the fixed part that it is connected to. The base stations transmit a Radio Fixed Part Identity, RFPI, on the air interface. 25 The RFPI is a combination of the PARI, the RPN and an extension bit E, and identifies the RFP and the FP that the RFP is connected to. The RFPI is used by the Portable Parts, PPs (handsets), to determine if they have access 30 to the network.

In addition to the RFPI, the RFP may transmit a *Secondary Access Rights Identity*, SARI, which may also be used to give the PPs access to the network.

The layout and rules for use of ARIs and RFPI is defined  
5 in (1).

The structure of ARI and RFPI for private networks, class B, is shown in Figure 2. The elements are defined as follows:

10

**E**     **Extension bit.** Indicates if an SARI is available or not. Not relevant for this document.

**ARC**   **Access Rights Class**

Shows the type of access to a DECT network, such as  
15 residential, private or public.

**EIC**   **Equipment Installer's code**

This a code that is supplied by ETSI identifies the installer of the DECT system, e.g. Ericcson.

**FPN**   **Fixed Part Number**

A 12-bit number that identifies the fixed part. The  
20 number is unique to each FP within a network.

**RPN**   **Radio Fixed Part Number**

An 8-bit number that identifies the radio fixed part. The number is unique to each RFP within an FP.

25

The problem that this Invention Disclosure discusses is that of handling the different parameters such as PARI, RPN and HLI, in a network with many FPs. This applies both to the network owner, who must keep track of a  
30 number of parameters in his own network, and to the Equipment Installer (e.g. Ericsson) who must keep a data base of parameters for all the fixed parts sold.

If an FP or RFP is to be removed, or if an FP or RFP is added to the network, the FP or RFP must be assigned a PARI or an RPN. There are also other parameters that must be adapted to handle the new or removed FP or RFP, such as HLI. The Equipment Installer must find a free identity (ARI) for the customer (network owner), and the customer must then assign the value to the network.

This manual administration of parameters requires extensive bookkeeping and is therefore time consuming and costly.

#### Known solution

The use of DECT identities is described in detail in ETSI standards (1). ETSI does not, however, say anything about how the dealer of the system shall select and maintain the parameters.

#### Problems with known solutions

Administration of identities for DECT systems is time consuming and costly both for the manufacturer and the operator of the equipment. Anything that can reduce the complexity of operation is therefore desirable.

The problems with handling DECT identities can be separated in three areas:

- 1     **Manufacturer:** Assigning ARI values of the DECT equipment that is sold, and maintaining a database of these with reference to whom the equipment is sold. This is especially complex if the equipment is sold via retailers.

2     **Network owner:** More work to install new fixed parts,  
because the PARIs must be known and entered into the  
system manually. One cannot simply connect the  
5     hardware and start using it.

3     **Security (Network owner):** It is desirable to have as  
many of the (most significant) bits in the ARI for  
the different FPs in a network equal, to reduce the  
10     risk of illegal access. This decides the length of  
the HLI, and to maintain as high a security level as  
possible, the value of the HLI should be small. If  
FPs, with a different EIC than the existing FPs in  
the network, are added, the HLI will be large, and  
15     illegal access to the system will be easier.

#### Further prior art

From US 5,077,790 (D'Amico et al.) there is known a  
20     method for registration of a portable unit, that may be  
used in a communication system, comprising a network  
controller having a database for storing portable  
identification numbers. However, this prior art is silent  
about how to extend a telecommunication system having  
25     several fixed parts, in a safe and expedient manner.

US 5,572,574 relates to a method of on-air registration  
of a cordless telephone handset with a base station.  
Consequently, also this publication is silent about how  
30     to install new fixed parts in a network.

Objects of the invention

An object of the present invention is to provide an  
5 arrangement whereby the problems related to known  
solutions are eliminated.

Another object of the present invention is to provide an  
arrangement whereby the dealer of the system can select  
10 and maintain the related parameters in a far more  
expedient manner.

Still another object of the present invention is to  
provide an arrangement whereby a network owner can  
15 install new fixed parts in a more time-saving and  
appropriate manner.

Yet another object of the present invention is to provide  
an arrangement whereby the network owner can maintain a  
20 high and secure level in order to reduce the risk of  
illegal access.

Summary of the invention

25 These objects are achieved in an arrangement as stated in  
the preamble, which according to the present invention is  
characterised by the features as stated in the  
characterising clause of the enclosed patent claim 1.

30 In other words, according to the present invention there  
is given a solution of automatically generating the  
needed identities.

Further features and advantages of the present invention will appear from the following description taken in conjunction with the enclosed drawings, as well as from the further enclosed patent claims.

5

Brief disclosure of the drawings

Fig. 1 is a schematical diagram illustrating a DECT system with several fixed parts, in which system the present invention can find its application.

10

Fig. 2 is a schematical diagram illustrating the layout of ARI and RFPI class B, private access.

15 Detailed description of embodiments

Reference is made to Fig. 1, wherein is illustrated a Digital Enhanced Cordless Telecommunications System, DECT. This system comprises several fixed parts FP connected to the same local network LNW. An FP contains all the elements in a DECT network between the local network LNW and the DECT air interface.

20

Each FP has an ID that is unique within the network, the Primary Access Rights Identity, PARI.

25

Consequently, each FP connected to a LNW must have its own, unique PARI within the network.

The local network will manage the PARI identities such that each FP has its own unique PARI. The FP will manage the identities of the base stations, such that each base station has an RPN that is unique within the fixed part.

30

The local network will automatically select a new ARI when a new FP is connected. The FP will select a new base station identity when a new base station is connected.

- 5 When the first FP is connected to the network, the network must be given an SARI. The value of the SARI is given to the network operator by an Equipment installer (ref. EIC), and is entered into the network manually. The value of the SARI is unique to the network, and is  
10 distributed to all the FPs in the network, and is transmitted on all RFPs.

The PARI for each FP is calculated using the EIC-part of the SARI, see Figure 2. The HLI, which is common to the  
15 LNW, is recalculated and distributed to all FPs in the LNW when a new FP is added or removed.

The RPN for each RFP is handled by the individual FPs, and is automatically given to the RFPs when they are  
20 connected.

#### Advantages

The automatic generation of parameters will reduce  
25 service and maintenance cost both for the manufacturer/distributor and the operator of cordless telecommunication systems. This creates a concept of "plug-and-play".

- 30 Assigning similar PARI values to all FPs in a system ensures that the value of the HLI will be small. This reduces the risk that other users will attempt (illegal) access to the network.



Broadening

May be applicable to other cordless and cellular systems.

5

Glossary and Acronyms**Glossary****Fixed Part**

10

A physical grouping that contains all the elements in the DECT network between the local network and the DECT air interface.

15    **Equipment Installer**

The organisation that is responsible for installing the DECT equipment, usually the same as the manufacturer, e.g. Ericsson.

20    **Local Network**

A telecommunication network capable of offering local telecommunication services. In this document, the term "network" is used in the same meaning as "Local Network".

25

**Portable Part**

A physical grouping that contains all the elements between the user and the DECT air interface. Usually the cordless telephone handset.

30

**Radio fixed part**

A physical sub-group of an FP that contains all the radio endpoints that are connected to

a single system of antennas  
(=radio base station)

**Acronyms**

	<b>ARI</b>	Access Rights Identity
5	<b>DECT</b>	Digital Enhanced Cordless Telecommunications
	<b>EIC</b>	Equipment Installer's Code
	<b>FP</b>	Fixed Part
	<b>HLI</b>	Handover Length Indicator
	<b>LNW</b>	Local Network
10	<b>PARI</b>	Primary Access Rights Identity
	<b>PARK</b>	Portable Access Rights Key
	<b>PP</b>	Portable Part
	<b>RFP</b>	Radio Fixed Part
	<b>RPN</b>	Radio fixed Part Number
15	<b>SARI</b>	Secondary Access Rights Identity

**Reference documents**

- (1) **ETS300175-6 Second Edition**
- 20      Radio Equipment and systems (RES);  
Digital Enhanced Cordless Telecommunications (DECT);  
Common Interface (CI);  
Part 6: Identities and addressing

## C l a i m s

1. Arrangement in a network, especially for large Digital  
Enhanced Cordless Telecommunications (DECT) systems, i.e.  
5 systems with several fixed parts (FP) connected to the  
same local network (LNW),  
c a r a c h e r i s e d i n that each fixed part (FP)  
is given its own unique Primary Access Rights Identity  
(PARI), said PARI identities being managed by the local  
10 network LNW, and that each fixed part (FP) will manage  
the identities of associated Radio Fixed Parts/base  
stations (RFP) such that each base station will be given  
a Radio Fixed Part Number (RPN) that is unique with the  
Fixed Part (FP).
- 15
2. Arrangement as claimed in claim 1,  
c a r a c h e r i s e d i n that said local network  
(LNW) is further provided with means for selecting new  
Access Rights Identity (ARI) when a new fixed part (FP)  
20 is connected.
3. Arrangement as claimed in claim 1 or 2,  
c a r a c h e r i s e d i n that said fixed part (FP)  
comprises means for selecting a new base station/Radio  
25 Fixed Part Identity when a new base station/Radio Fixed  
Part is connected.
4. Arrangement as claimed in any of the preceding claims,  
c a r a c h e r i s e d i n that said network is  
30 given a Secondary Access Rights Identity (SARI),  
especially when a first fixed part (FP) is connected to  
the network.

5. Arrangement as claimed in claim 4,  
c a r a c h e r i s e d i n that said SARI is given  
to the network operator by an Equipment installer and is  
entered into the network manually.

5

6. Method as claimed in claim 4 or 5,  
c a r a c h e r i s e d i n that said SARI, being  
unique to the network, is distributed to all the FPs in  
the network and is transmitted to all RFPs.

10

7. Arrangement as claimed in any of the preceding claims,  
c a r a c h e r i s e d i n that said PARI of each FP  
is calculated by using the EIC-part of the SARI.

15

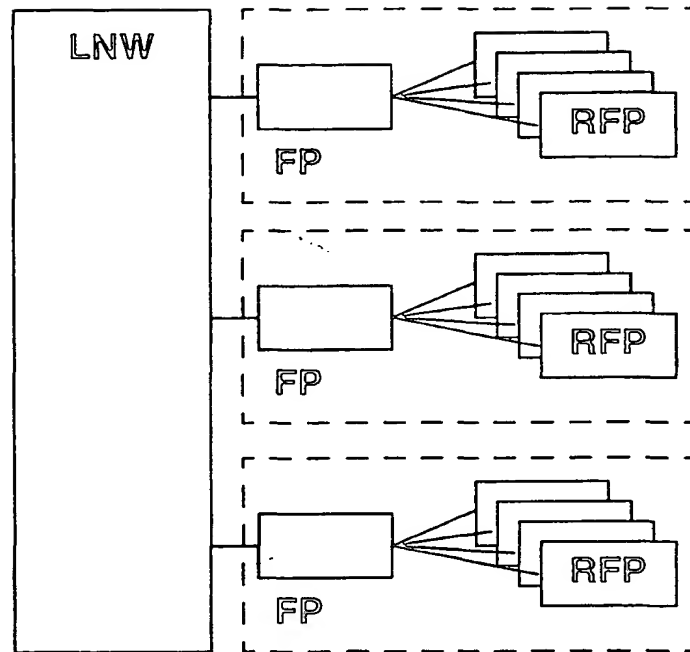
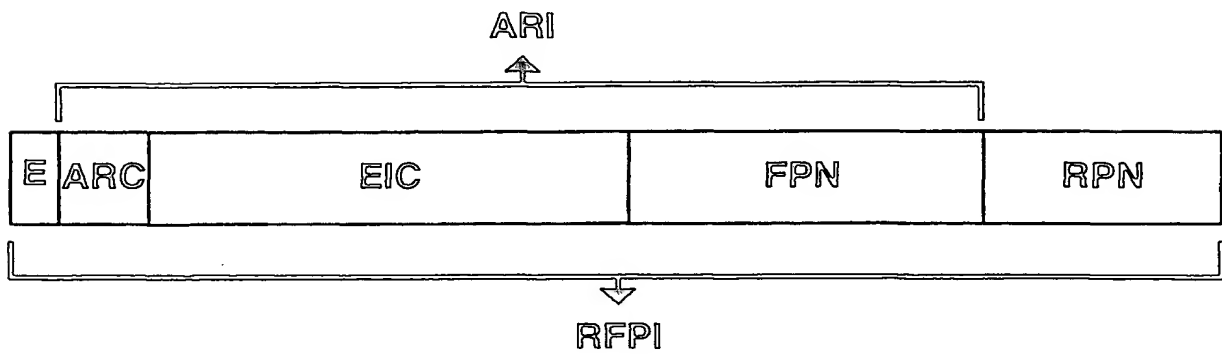
8. Arrangement as claimed in any of the preceding claims,  
c a r a c h e r i s e d i n that the Handover Length  
Indicator (HLI), which is common to the LNW, is  
recalculated and distributed to all FPs in the LNW when a  
new FP is added or removed.

20

9. Arrangement as claimed in any of the preceding claims,  
c a r a c h e r i s e d i n that the RPN for each RFP  
is handled by the individual FPs, and is automatically  
given to RFPs when they are connected.

25

10. Arrangement as claimed in any of the preceding  
claims,  
c a r a c h e r i s e d i n that the arrangement is  
implemented as a "plug-and-play" concept.

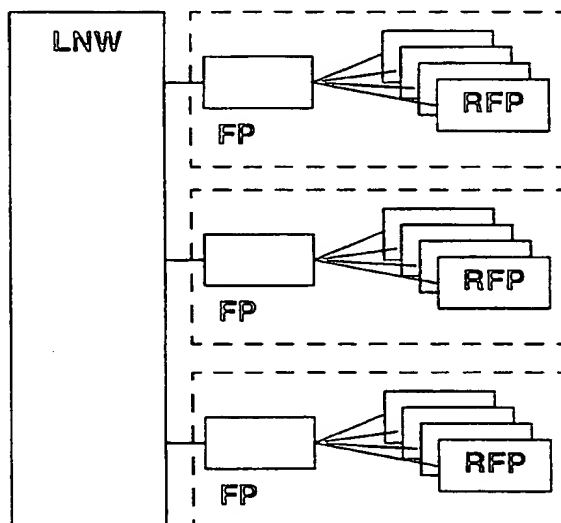
Figure 1Figure 2



## INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

<b>(51) International Patent Classification <sup>7</sup> :</b> H04Q 7/38, 7/26	A3	<b>(11) International Publication Number:</b> WO 00/33507 <b>(43) International Publication Date:</b> 8 June 2000 (08.06.00)
<b>(21) International Application Number:</b> PCT/NO99/00356 <b>(22) International Filing Date:</b> 29 November 1999 (29.11.99) <b>(30) Priority Data:</b> 19985608 1 December 1998 (01.12.98) NO <b>(71) Applicant (for all designated States except US):</b> TELEFONAK- TIEBOLAGET LM ERICSSON [SE/SE]; S-126 25 Stock- holm (SE). <b>(72) Inventors; and</b> <b>(75) Inventors/Applicants (for US only):</b> DYBEDOKKEN, Bjørn, Magne [NO/NO]; Nedre Toppenhaug 86, N-1353 Bærum Verk (NO). TØNNESLAND, Sverre [NO/NO]; Etterstad- sletta 76, N-0659 Oslo (NO). <b>(74) Agent:</b> OSLO PATENTKONTOR AS; Postboks 7007 M, N-0306 Oslo (NO).		<b>(81) Designated States:</b> AE, AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CR, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), DM, EE, EE (Utility model), ES, FI, FI (Utility model), GB, GD, GE, GH, GM, HR, HU, ID, IL, IN, IS, JP, KE, KG, KP, KR, KR (Utility model), KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, TZ, UA, UG, US, UZ, VN, YU, ZA, ZW, ARIPO patent (GH, GM, KE, LS, MW, SD, SL, SZ, TZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, CY, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, GW, ML, MR, NE, SN, TD, TG).  <b>Published</b> <i>With international search report.</i>  <b>(88) Date of publication of the international search report:</b> 10 August 2000 (10.08.00)

**(54) Title:** ARRANGEMENT IN A NETWORK, ESPECIALLY FOR LARGE DIGITAL ENHANCED CORDLESS TELECOMMUNI-  
CATIONS (DECT) SYSTEMS

**(57) Abstract**

The present invention relates to an arrangement in a network, especially for large Digital Enhanced Cordless Telecommunications (DECT) Systems, i.e. systems with several fixed parts (FP) connected to the same local network (LNW), and for the purpose of providing a system that can select and maintain the parameters of such a system in a more efficient and expedient manner, it is according to the invention suggested that each fixed part (FP) is given its own unique Primary Access Rights Identity (PARI), said PARI identities being managed by the local network LNW, and that each fixed part (FP) will manage the identities of associated Radio Fixed Parts/base stations (RFP) such that each base station will be given a Radio Fixed Part Number (RPN) that is unique with the Fixed Part (FP).

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BE	Belgium	GN	Guinea	MK	The former Yugoslav Republic of Macedonia	TM	Turkmenistan
BF	Burkina Faso	GR	Greece	ML	Mali	TR	Turkey
BG	Bulgaria	HU	Hungary	MN	Mongolia	TT	Trinidad and Tobago
BJ	Benin	IE	Ireland	MR	Mauritania	UA	Ukraine
BR	Brazil	IL	Israel	MW	Malawi	UG	Uganda
BY	Belarus	IS	Iceland	MX	Mexico	US	United States of America
CA	Canada	IT	Italy	NE	Niger	UZ	Uzbekistan
CF	Central African Republic	JP	Japan	NL	Netherlands	VN	Viet Nam
CG	Congo	KE	Kenya	NO	Norway	YU	Yugoslavia
CH	Switzerland	KG	Kyrgyzstan	NZ	New Zealand	ZW	Zimbabwe
CI	Côte d'Ivoire	KP	Democratic People's Republic of Korea	PL	Poland		
CM	Cameroon	KR	Republic of Korea	PT	Portugal		
CN	China	KZ	Kazakstan	RO	Romania		
CU	Cuba	LC	Saint Lucia	RU	Russian Federation		
CZ	Czech Republic	LI	Liechtenstein	SD	Sudan		
DE	Germany	LK	Sri Lanka	SE	Sweden		
DK	Denmark	LR	Liberia	SG	Singapore		
EE	Estonia						

## INTERNATIONAL SEARCH REPORT

International application No.

PCT/NO 99/00356

## A. CLASSIFICATION OF SUBJECT MATTER

IPC7: H04Q 7/38, H04Q 7/26

According to International Patent Classification (IPC) or to both national classification and IPC

## B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC7: H04Q

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practicable, search terms used)

## C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category*	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	WO 9828937 A1 (TELEFONAKTIEBOLAGET LM ERICSSON), 2 July 1998 (02.07.98), page 5, line 9 - line 21	1
A	--	2-20
A	US 5077790 A (D'AMICO ET AL), 31 December 1991 (31.12.91)	1-20
A	US 5572574 A (BARNES ET AL), 5 November 1996 (05.11.96)	1-20
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☐ Further documents are listed in the continuation of Box C.☒ See patent family annex.

## \* Special categories of cited documents:

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
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Date of the actual completion of the international search

6 April 2000

Date of mailing of the international search report

24.05.2000

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# INTERNATIONAL SEARCH REPORT

SA 111

Information on patent family members

02/12/99

International application No.

PCT/NO 99/00356

Patent document cited in search report	Publication date	Patent family member(s)	Publication date
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US 5572574 A	05/11/96	AU 635357 B AU 6646890 A CA 2048605 A EP 0453538 A WO 9107856 A	18/03/93 13/06/91 12/05/91 30/10/91 30/05/91